Air Quality Permitting
State ment of Basis

April 24, 2006

Tier II Operating Permit and Permit to Construct No. P-060109

Foam Molders, Inc., Post Falls

Facility ID No. 055-00047

Prepared by:

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AIR QUALITY DIVISION

FINAL

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Acronyms, Units, and Chemical Nomenclature

acf	actual cubic feet
AFS	AIRS Facility Subsystem
AP-42	United States Environmental Protection Agency Compilation of Air Pollutant Emission Factors
Btu	British thermal unit
CAA	Clean Air Act
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EPA	Environmental Protection Agency
EPS	expandable polystyrene
gr/dscf	grains per dry standard cubic feet
HAPs	Hazardous Air Pollutants
IDAPA	A numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
km	kilometer
lb/day	pound per day
MACT	Maximum Available Control Technology
MMBtu	Million British thermal units
MMBtu/hr	Million British thermal units per hour
MMscf	Millsion standard cubic feet
NESHAP	Nation Emission Standards for Hazardous Air Pollutants
NG	natural gas
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
NSPS	New Source Performance Standards
O_3	ozone
Pb	lead
PM	Particulate Matter
PM_{10}	Particulate Matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	Permit to Construct
PTE	Potential to Emit
Rules	Rules for the Control of Air Pollution in Idaho
scf	standard cubic feet
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SM	synthetic minor
SO_2	sulfur dioxide
SO_x	sulfur oxides
T/yr	Tons per year
UTM	Universal Transverse Mercator
VOC	volatile organic compound

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01 Sections 201 and 404.04, Rules for the Control of Air Pollution in Idaho (Rules) for Tier II operating permits and Permits to Construct.

2. FACILITY DESCRIPTION

The Expandable Polystyrene (EPS) raw materials, or beads, come into the facility in 1,000-pound lined Gaylord boxes. The beads contain an encapsulated blowing agent, pentane, which is usually 3.5 to 6.5% of the material by weight. The emission rates at each phase of the operation vary according to such factors as the density of the expanded beads, the shape and size of the molded parts, and finished goods storage requirements. The beads are typically vacuum fed from the Gaylord boxes to the pre-expanders where the beads are partially expanded to their desired density (referred to as pre-puff).

Approximately 25% of the encapsulated pentane is released in the expansion process. The expanded beads are then aged from 2 to 48 hours to allow the pre-puff to stabilize by diffusing air into the expanded beads. Approximately 20% of the initial pentane is released during this aging process. These materials are then transferred directly to the molds where, with use of steam, they are fused together into the desired shapes created by the mold forms. Approximately 15-25% of the initial pentane is released during the molding process. In the post-molding phase, approximately 15% of the initial pentane is released in the first 24 hours, and approximately 10% in the next 24 hours. The remaining 15% pentane diffuses out of the product over a long period of time.

3. FACILITY / AREA CLASSIFICATION

Foam Molders, Inc. (Foam Molders) is classified as a synthetic minor facility because, without permit limits on the potential to emit, emissions would exceed 100 tons per year. The AIRS classification is "SM80" because the potential to emit is limited to greater than 80% of the criteria air pollutant major source threshold.

The facility is located within AQCR 62 and UTM zone 11. The facility is located in Kootenai County which is designated as unclassifiable for all criteria pollutants (PM_{10}, CO, NO_X, SO_2, Pb, and O_3).

The AIRS information provided in Appendix B defines the classification for each regulated air pollutant at Foam Molders. This required information is entered into the EPA AIRS database.

4. APPLICATION SCOPE

This project is intended to revise the Tier II operating permit and Permit to Construct (Tier II and PTC) issued December 10, 2002, by removing the references to specific process equipment descriptions, so as to maintain operational flexibility by allowing the installation, replacement, and/or removal of the process equipment, while maintaining existing total daily and total annual facility-wide VOC emissions from the facility.

The following revisions were proposed in the facility's application:

1. Eliminate equipment descriptions from the permit.
2. Remove daily and annual EPS bead throughput limits.
3. Remove daily VOC emission limit.

4.1 Application Chronology

February 17, 2006	Application received.
April 4, 2006	Application determined complete.

5. PERMIT ANALYSIS

This section of the Statement of Basis describes the regulatory requirements for this Tier II and PTC.

5.1 Equipment Listing

As explained in Section 4.0, references to the specific equipment descriptions have been revised per the applicant's request. None of the permit revisions have resulted in an increase of emissions.

5.2 Emissions Inventory

The emissions inventory table appearing in Appendix A includes all potential emissions from all sources at the facility. The emissions inventory table is provided for informational purposes only.

5.3 Modeling

No modeling was required for this permit because the emissions are not increasing.

5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this Tier II and PTC.

IDAPA 58.01.01.209.04 and 404.04 ..... Revisions of Permit to Construct and Tier II Operating Permits

The February 16, 2006 application proposed revisions to the facility's existing Tier II and PTC. As explained in Section 4.0, these revisions have resulted in no net increases of emissions. Therefore, in accordance with IDAPA 58.01.01.209.04 and 404.04, no public comment period is required.

5.5 Fee Review

In accordance with IDAPA 58.01.01.225, this general permitting action, which required minimal engineering, requires a PTC processing fee of $500. The PTC processing fee is due prior to the issuance of the revised Tier II and PTC. The processing was paid April 28, 2006.

6. PERMIT CONDITIONS

This section describes only the revisions made to the permit as a result of this permitting action.

The facility-wide requirements and general provision sections have been updated to incorporate the latest language pertaining to those permit conditions.

This permit revises and replaces the terms and conditions of Tier II and PTC No. T2-020105, issued December 10, 2002.

The facility's location has been changed from 5548 N. McGuire Road, Post Falls, Idaho to 9456 N. McGuire Road, Post Falls, Idaho, reflecting an address change that was prompted by the renumbering of City and County addresses in the Post Falls area.

While DEQ attempted to incorporate all of the facility's revision proposals, as detailed in Section 4.0, into the revised Tier II and PTC; however, certain revisions could not be fulfilled. The following is a brief summary detailing the Departments response(s) to the revision proposals appearing in Section 4.0.

1. The equipment descriptions for the pre-expander, puff storage, molding, and product storage, were removed and replaced by "Process Equipment". This provides operation flexibility by allowing the installation, replacement, and/or removal of process equipment to accommodate industry changes.
2. Daily and annual throughput limits are required to demonstrate compliance with the daily and annual VOC emission limits. Operational flexibility is provided by back calculating the allowable throughput using the % pentane by weight for the EPS beads. Although no specific throughput limit is noted, the facility is required to demonstrate compliance with the VOC emission limits by monitoring and recording pentane emissions in pounds of VOC per day and pounds of VOC per the most recent 12-month period, using the equations in Permit Condition 3.3.1 and 3.4.
3. The daily VOC emission limit is required to demonstrate compliance with the daily toxic pollutant screening levels, because the facilities potential to emit is above 118 lb/hr.

Existing permit conditions are identified as "Existing Permit Conditions", and revised permit conditions are identified as "Revised Permit Conditions."

6.1 Emission Unit Description

Process Equipment

6.2 Existing Permit Condition 1.3

Permit Sections	Source Description	Emissions Control(s)
2	Boiler (A) Manufacturer: Superior Model: 6-750 Rated heat capacity: 6.3 MMBtu/hr Burner type: Horizontally fired Stack diameter: 14 inches Stack height: 32 feet Fuel: Natural gas	None
3	Pre-expander (H) Manufacturer: Dae Kong Machine Co. Model: DKE-3600SP Maximum hourly process rate: 3,600 lb EPS bead/hr Stack diameter: 4 inches Stack height: 33.5 feet	None
3	Prepuff storage	None
3	Block mold	None
3	Product storage	None

6.3 Revised Permit Condition 1.3

Permit Section	Source Description	Emissions Control(s)
2	Boiler A Manufacturer: Superior Model: 6-750 Rated heat capacity:6.3 MMBtu/hr Burner type: Horizontally fired Stack diameter: 14 inches Stack height: 32 feet Fuel: Natural gas	None
3	Processing equipment	None

6.4 Existing Permit Condition 3.1

The EPS raw material (beads) arrives in 1,000-pound boxes. The beads are vacuum fed to the pre-expander where they are partially expanded to their desired density, using steam from a natural gas-fired boiler. Steam is used to heat the beads and to release pentane, which is the encapsulated blowing agent contained within the beads. Expanded beads are aged in the prepuff storage for a period between two to 48 hours, to allow the prepuff to stabilize. The material is then transferred into molds or presses where, using steam, the beads are fused together into desired shapes, based on the mold forms. The molded shapes are then cut to their final size and shape, and stored. Each step of the process results in pentane emissions.

6.5 Revised Permit Condition 3.1

The EPS raw material (beads) arrives in 1,000-pound boxes. The beads are vacuum fed to the pre-expander where they are partially expanded to their desired density, using steam from a natural gas-fired boiler. Steam is used to heat the beads and to release pentane, which is the encapsulated blowing agent contained within the beads. Expanded beads are aged in the prepuff storage for a period between two to 48 hours, to allow the prepuff to stabilize. The material is then transferred into molds or presses where, using steam, the beads are fused together into desired shapes, based on the mold forms. The molded shapes are then cut to their final size and shape, and stored. Each step of the process results in pentane emissions.

VOC emissions, as pentane, are emitted from the processes and equipment referenced above, the above referenced equipment is hereafter referred to as "process equipment".

6.6 Existing Permit Condition 3.3

The combined VOC emissions from the pre-expander, the 24 hours of prepuff storage, molding, the first 24 hours after molding, and the second 24 hours after molding, shall not exceed 2,856 lb/day or 95.2 tons per any consecutive 12-month period.

6.7 Revised Permit Condition 3.3

The combined VOC emissions from the process equipment shall not exceed 2,856 lb/day or 95.2 tons per any consecutive 12-month period.

6.8 New Permit Condition 3.3.1

Compliance with Permit Condition 3.3 shall be determined using the results from the equations in Permit Condition 3.4 in conjunction with following equations:

- Daily VOC Limit

$$\text{Daily VOC} = Throughput\left(\frac{lb}{day}\right) \times \%\,pentane \times 0.85$$

- Annual VOC Limit

$$\text{Annual VOC} = Throughput\left(\frac{lb}{12-months}\right) \times average\%\,pentane \times 0.85$$

6.9 Existing Permit Condition 3.4

The maximum daily throughput of the pre-expander shall not exceed 48,000 lb/day. The maximum annual throughput of the pre-expander shall not exceed 3,200,000 pounds per any consecutive 12-month period.

6.10 Revised Permit Condition 3.4

Throughput shall be limited based on the pentane content of the EPS beads and shall be determined using the following equations:

- Maximum Daily Throughput Limit

$$\text{Daily Throughput (lb/day)} = \frac{2{,}856\,\frac{lbVOC}{day}}{\%\,pentane \times 0.85}$$

- Maximum Annual Throughput Limit

$$\text{Annual Throughput (lb/12-months)} = \frac{95.2\,ton \times 2000\,\frac{lb}{ton}}{average\%\,pentane \times 0.85}$$

6.11 Existing Permit Condition 3.6

A compilation of the most recent five years of records shall be kept on site and shall be made available to Department representatives upon request. The permittee shall monitor and record the following information:

- The throughput of EPS beads in pounds per day and pounds per the most recent 12-month period.
- Documentation for each purchase of EPS beads that shows the percent pentane by weight of the beads.

6.12 Revised Permit Condition 3.6

A compilation of the most recent five years of records shall be kept onsite and shall be available to Department representatives upon request. The permittee shall monitor and record the following information:

- The pentane emissions in pounds of VOC per day and pounds of VOC per the most recent 12-month period, using the equations in Permit Condition 3.3.1 and 3.4;

- The actual throughput of beads calculated in Permit Condition 3.4 both daily and annually;
- Documentation for each purchase of EPS beads that shows the percent pentane by weight of the beads.

7. PUBLIC COMMENT

A public comment period on the proposed Tier II operating permit and Permit to Construct, and application materials was not required, in accordance with IDAPA 58.01.01.209.04 and 404.04, because emissions do not increase.

8. RECOMMENDATION

Based on review of the application materials, and all applicable state and federal rules and regulations, staff recommends that Foam Molders, Inc. be issued final Tier II Operating Permit and Permit to Construct No. P-060109 for revisions to their existing Tier II and PTC. No public comment period is required, and the project does not involve PSD requirements.

SDB/bf Permit No. P-060109

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APPENDIX A

Emissions Inventory

EMISSIONS INVENTORY BASED ON PTE

Foam Molders Inc., Post Falls Potential Emissions[a] – Hourly (lb/hr), and Annual (T/yr)										
Source Description	**PM_{10}**		**NO_x**		**CO**		**VOC**		**SO_2**	
	lb/hr	**T/yr**	**lb/hr**	**T/yr**	**lb/hr**	**T/yr**	**lb/hr**	**T/yr**	**lb/hr**	**T/yr**
Boiler, Superior, 6.32 MMBtu/hr natural gas	0.05	0.20	0.60	2.63	0.50	2.21	0.03	0.14	0.004	0.02
Process Equipment							119	95.2		
Total	0.05	0.20	0.60	2.63	0.50	2.21	119	95.34	0.004	0.02

[a] As determined by a pollutant-specific U.S. EPA reference method, a Department-approved alternative, or as determined by the Department's emissions estimation methods used in this permit analysis.

APPENDIX B

Foam Molders, Incorporated

Tier II Operating Permit and Permit to Construct No. P-060109

Facility ID No. 055-00047

AIRS Data Entry Form

AIRS/AFS FACILITY-WIDE CLASSIFICATION DATA ENTRY FORM

AIR PROGRAM / POLLUTANT	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	TITLE V	AREA CLASSIFICATION A – Attainment U – Unclassifiable N – Nonattainment
SO_2	B						U
NO_x	B						U
CO	B						U
PM_{10}	B						U
PT (Particulate)	B						
VOC	SM					SM80	
THAP (Total HAPs)	B						
			APPLICABLE SUBPART				

A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For NESHAP only, class "A" is applied to each pollutant which is below the 10 ton-per-year (T/yr) threshold, but which contributes to a plant total in excess of 25 T/yr of all NESHAP pollutants.

SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.

B = Actual and potential emissions below all applicable major source thresholds.

C = Class is unknown.

ND = Major source thresholds are not defined (e.g., radionuclides).

NA = Not applicable as defined in IDAPA 58.01.01.579, constructed prior to baseline dates.